REMARKS

In the Office Action mailed July 26, 2005, the Examiner withdrew all of his previous rejections, finding Applicants' arguments in Amendment A persuasive. The Examiner rejected claims 1-10, 12, 14-17, 19-55 under 35 U.S.C. § 103(a) in view of newly cited art. The Examiner allowed claims 11, 13, and 18.

DOUBLE PATENTING

The Examiner withdrew the double patenting rejection of claims 1-55 in view of Applicants' persuasive arguments in Amendment A.

CLAIM REJECTIONS UNDER 35 U.S.C. § 103(a)

In section 3 of the Office Action, the Examiner rejected claims 1, 6, and 7 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,072,903 to Maki et al. ("Maki") in view of U.S. Patent No. 6,311,644 to Pugh ("Pugh"). Applicants respectfully traverse.

Maki discloses an image processing system and method for head-tracking (following the movement of a head of a person), video compression capable of decreasing the data amount required for image communication by extracting the motion vector of the person in a teleconference, and three-dimensional pointing in a virtual reality system. Maki, col. 1, lines 11-18. A second embodiment of the system of Maki creates a surface model of the head of a person. Maki, col. 14, lines 52-53. This second embodiment includes a 3-D motion information extraction unit that determines the position and posture of the head of the person, and a distance information detector that detects information on the distance to the object and reconstructs the shape according to the position and posture of the head. Maki, col. 15, lines 9-16; 49-51. A third embodiment of the system of Maki obtains images of an object using a video camera, analyzes the images for use in three-dimensional pointing, and acquires and tracks the posture of the object. Maki, col. 23, line 64 – col. 24, line 11. The system of Maki

detects the position and posture of a person's head for the purposes of creating a model of the person's head or using the position and posture of the head as a three-dimensional pointer. Maki, col. 2, lines 47-59.

Amended claim 1 recites "a computer configured to determine a position and shape of an animal from video images and to characterize activity of said animal as one of a set of predetermined behaviors based on an analysis of changes in said position and said shape over time." Maki does not teach or disclose a computer configured "to characterize activity of said animal" as recited in original claim 1, nor "to characterize activity of said animal as one of a set of predetermined behaviors" as recited in amended claim 1. There is no teaching or disclosure in Maki of using changes in the position and shape of an animal to characterize activity of an animal, much less characterize activity of an animal as one of a set of predetermined behaviors. The section of Maki cited by the Examiner (Col. 15, lines 49 – 57) describes the distance information detector which merely gathers distance information to use to reconstruct the object. Further, claim 2 of Maki (Col. 32, lines 56-67) referred to by the Examiner, which is dependent from claim 1 of Maki, recites additional information about the distance information detector for use in acquiring the shape of the object as set forth in the preamble of claim 1 of Maki. Thus, the shape of the object is not detected as stated by the Examiner, but rather it is what the system in Maki is trying to determine. The citation to col. 24 does not supply the missing elements and merely explains that feature points are used to track the object over a series of images.

The Examiner stated that Maki does not explicitly state "one of a set of predetermined behaviors," and that Pugh teaches predetermined animal behavior events and means for predicting when a predicted animal behavior will approximately occur.

Pugh discloses an apparatus for use in training a dog. A user inputs information regarding the behavior of the dog, as observed by the user, and the apparatus uses this information regarding the dog's behavior patterns to predict when one of the dog's behaviors will likely occur in the future. The apparatus then outputs a signal to inform the user when the predicted behavior is likely to occur. Pugh, col. 1, line 59 – col. 2, line 2. For example, the user will input into the system each of the dog's bladder relief events, and the apparatus uses this information to predict when in the future the dog's next bladder relief event will occur and signals to the user when it is time to take the dog outside. The apparatus educates the user as to when future bladder relief events are most likely to occur based on previously recorded such events. Pugh, col. 4, lines 4-18.

The Pugh reference does not teach the limitation of "to characterize activity of said animal as one of a set of predetermined behaviors" as recited in claim 1. Claim 1 recites a *computer* configured "to characterize activity of said animal as one of a set of predetermined behaviors based on an analysis of changes in said position and said shape over time." In Pugh, the *user* characterizes the behavior of the dog, for example as a bladder relief event that occurs inside the house or a bladder relief event that occurs outside the house, and then inputs the information into the apparatus.

Further, there is no motivation to combine Maki with Pugh, and the Examiner has not pointed to any suggestion that one skilled in the art should combine them. Maki discloses an image processing system and method for head-tracking (following the movement of a head of a person), video compression capable of decreasing the data amount required for image communication by extracting the motion vector of the person in a teleconference, and three-dimensional pointing in a virtual reality system. Maki, col. 1, lines 11-18. Pugh discloses an apparatus used to assist a user in training a dog. Maki and Pugh are directed to *completely*

non-analogous arts. One of ordinary skill in the art of image processing systems would have *no* motivation to combine a reference relating to image processing systems with a reference relating to dog training, and one of ordinary skill in the art of dog training would have *no* motivation to combine a reference relating to dog training with a reference relating to image processing systems. It is of course impermissible hindsight reasoning to rely on the current application to find a motivation to combine.

None of the cited references, either alone or in combination, teaches or discloses all of the limitations of amended claim 1, and there is no motivation to combine the references. Applicants respectfully submit that claim 1 is not obvious in view of Maki and Pugh and is allowable. Claims 2-7 depend, directly or indirectly, from claim 1 and are therefore allowable for at least the same reasons.

Regarding claims 6 and 7, the Examiner unfortunately persists in his assertion that Maki discloses a biological mouse and a biological rat without explanation of his reasons for making such a conclusion. The portion of Maki cited by the Examiner (Col. 2 , lines 20-26) discloses "a three-dimensional mouse enabling movement and a pointing action in a three-dimensional space by the *operation of the buttons on the device.*" (emphasis added). It is clear from this quotation that the mouse of Maki is *a device with buttons,* i.e. a *computer mouse.* Neither a biological mouse nor a biological rat is a device that enables a pointing action by operation of its buttons. None of the cited references teaches or discloses all of the limitation of claims 6 and 7, and there is no motivation to combine the references. Applicants respectfully submit that claims 6 and 7 are not obvious and are allowable.

The Examiner rejected claims 2-5 under 35 U.S.C. § 103(a) as being unpatentable over Maki in view of Pugh, and further in view of U.S. Patent No. 6,715,444 to Yabusaki et al. ("Yabusaki"). Applicants respectfully traverse.

As set forth above, Maki in combination with Pugh does not disclose all of the limitations of independent claim 1 and there is no motivation to combine the two references, and for those reasons alone the rejection should be withdrawn.

Regarding claim 2 and its dependent claims, even if one were to presume that the combination of Maki and Pugh was proper, Yabusaki does not disclose a "video digitization unit . . . for . . . converting said video images from analog to digital format." The portion of Yabusaki cited by the Examiner (Col. 3, lines 38-54) discloses that a vibration of a cage is detected as an electrical signal by the displacement of a sensor, and that this electrical signal is detected by a frequency analyzer and converted into a digital signal. An electrical signal created by displacement of a vibration sensor that is converted into a digital signal does not teach or disclose a video digitization unit that converts *video images* from analog to digital format. Further, there in no motivation to combine Yabusaki with either Maki or Pugh, as Yabusaki has nothing to do with processing images or training dogs. None of the cited references, either alone or in combination, teaches or discloses all of the limitations of claim 2, and there is no motivation to combine the references. Applicants respectfully submit that claim 2 is not obvious and is allowable.

Regarding claim 3 and its dependent claims, Maki does not disclose "an animal identification, segregation, and tracking module." The portion of Maki cited by the Examiner (Col. 29, lines 23-28) discloses an image calculator to determine the luminance of the feature points on the object. None of the cited references, either alone or in combination, teaches or discloses all of the limitations of claim 3, and there is no motivation to combine the references. Applicants respectfully submit that claim 3 is not obvious and is allowable.

Regarding claim 4 and its dependent claims, Maki does not disclose "a behavior identification module for characterizing activity of said animal." The portion of the

specification of Maki cited by the Examiner (Col. 23, lines 37-51) discloses that the three-dimensional position and posture of the object is determined using feature points. Claim 3 of Maki cited by the Examiner discloses a method of acquiring a shape of an object. Neither of these citations discloses the "behavior identification module" as recited in claim 4. None of the cited references, either alone or in combination, teaches or discloses all of the limitations of claim 4, and there is no motivation to combine the references. Applicants respectfully submit that claim 4 is not obvious and is allowable.

Regarding claim 5, even if one were to presume that the combination of Maki and Pugh was proper, Maki does not disclose a "standard animal behavior storage module that stores information about known behavior of a predetermined standard animal." Claim 4 of Maki cited by the Examiner discloses a method of estimating distance information on an object as part of the method of acquiring a shape of an object of claim 3 of Maki. The portion of the specification of Maki cited by the Examiner (Col. 7, lines 19-33) discloses a memory for storing time-series images; a series of moving pictures. Neither of these citations discloses a "standard animal behavior storage module that stores information about known behavior of a predetermined standard animal." A series of moving pictures is not information about known behavior of a predetermined standard animal. None of the cited references, either alone or in combination, teaches or discloses all of the limitations of claim 5, and there is no motivation to combine the references. Applicants respectfully submit that claim 5 is not obvious and is allowable.

The Examiner rejected claims 8-10, 12, 14-17, 19, and 21-55 under 35 U.S.C. § 103(a) as being unpatentable over Maki in view of Pugh and further in view of U.S. Patent No. 6,242,456 to Shuster et al. ("Shuster"). Applicants respectfully traverse.

Claim 8 recites "classifying said changes in position and shape of said animal as postures; and characterizing activity of said animal as one of a set of predetermined behaviors based on a comparison of a sequence of said postures to pre-trained models or rules of said set of predetermined behaviors." As set forth above regarding claim 1, Maki does not disclose characterizing activity of an animal as one of a set of predetermined behaviors. Maki also does not disclose comparing a sequence of postures to pre-trained models or rules of a set of predetermined behaviors. The portion of Maki cited by the Examiner (Col. 27, lines 20-31) discloses a comparison section that generates synthesized images and evaluates postures according to the similarity of the generated images to the image of the object. In other words, Maki teaches comparing *images* to determine postures, not "comparing a sequence of postures to pre-trained models or rules of a set of predetermined behaviors" as recited in claim 8.

The Examiner stated that neither Maki nor Pugh teaches classifying changes in position and shape of the animal as postures, but that Shuster teaches this limitation. The portion of Shuster cited by the Examiner (Col. 3, lines 33-62) lists various compulsive or stereotypical behaviors in dogs, and states that these behaviors can also be observed in other animals. Shuster merely provides a list of various behaviors, and does not teach or disclose "tracking changes" and "classifying said changes in position and shape of said animal as postures" as recited in claim 8.

As set forth above, there is no motivation for combining Maki with Pugh. Further, there is no motivation to combine Shuster with either Maki or Pugh, and the Examiner has not pointed to any suggestion that one skilled in the art should combine them. Maki discloses an image processing system and method for head-tracking (following the movement of a head of a person), video compression capable of decreasing the data amount required for

image communication by extracting the motion vector of the person in a teleconference, and three-dimensional pointing in a virtual reality system. Maki, col. 1, lines 11-18. Shuster discloses a method for treating a repetitive behavior disorder in animals by administering doses of one or more NMDA receptor antagonists. Shuster, col. 1, lines 56-61. These two references are directed to *completely non-analogous* arts. Applicants respectfully submit that neither Maki nor Shuster provide any possible motivation to combine the image processing system of Maki with the method of treating a disorder in animals with a certain type of drug of Shuster. It is of course impermissible hindsight reasoning to rely on the current application to find a motivation to combine.

Pugh discloses an apparatus used for assisting a user in training a dog. Shuster discloses a method for treating a repetitive behavior disorder in animals by administering doses of one or more NMDA receptor antagonists. These two references are directed to *completely non-analogous* arts. Applicants respectfully submit that neither Pugh nor Shuster provide any possible motivation to combine the dog training apparatus of Pugh with the method of treating a disorder in animals with a certain type of drug of Shuster. It is of course impermissible hindsight reasoning to rely on the current application to find a motivation to combine.

None of the cited references, either alone or in combination, teaches or discloses all of the limitations of claim 8, and there is no motivation to combine the references. Applicants respectfully submit that claim 8 is not obvious and is allowable. Claims 9, 10, 12, 14-17, and 19-55 depend, directly or indirectly, from claim 8 and are therefore allowable for at least the same reasons.

Regarding claim 9 and its dependent claims, Maki does not disclose "describing said sequence of said postures as behavior primitives and aggregating said behavior primitives as

into actual behavior over a range of images." The portion of the specification of Maki cited by the Examiner (Col. 22, line 56 – Col. 23, line 7) discloses determining a distance image by executing a certain evaluation function. Claim 1 of Maki cited by the Examiner discloses a method for acquiring the shape of a target object. Neither determining a distance image nor acquiring a shape of an object teach "describing said sequence of said postures as behavior primitives and aggregating said behavior primitives as into actual behavior over a range of images" as recited in claim 9. None of the cited references, either alone or in combination, teaches or discloses all of the limitations of claim 9, and there is no motivation to combine the references. Applicants respectfully submit that claim 9 is not obvious and is allowable.

Regarding claim 10 and its dependent claims, Maki does not disclose "describing a set of conditions and rules required for characterizing said activity; and matching and testing generated features to see if said conditions and rules are satisfied." The portion of Maki cited by the Examiner (Col. 4, lines 18-27) discloses an estimation section for estimating information on the distance to a target object. An estimation section for estimating distance to a target object does not teach or disclose "describing a set of conditions and rules required for characterizing said activity; and matching and testing generated features to see if said conditions and rules are satisfied" as recited in claim 10. None of the cited references, either alone or in combination, teaches or discloses all of the limitations of claim 10, and there is no motivation to combine the references. Applicants respectfully submit that claim 10 is not obvious and is allowable.

Regarding claim 12 and its dependent claims, Maki does not disclose classifying changes in position and shape of an animal as postures "using statistical and contour-based shape information." The portion of Maki cited by the Examiner (Col. 9, lines 14-27) discloses extracting connected feature points by finding where contours in an image intersect

each other. Extracting connected feature points from an image does not disclose classifying

changes in position and shape of an animal as postures "using statistical and contour-based

shape information" as recited in claim 12. None of the cited references, either alone or in

combination, teaches or discloses all of the elements of claim 12, and there is no motivation

to combine the references. Applicants respectfully submit that claim 12 is not obvious and is

allowable.

Regarding claim 14, Maki does not disclose classifying changes in position and shape

of an animal as postures using "contour-based shape information selected from the group

consisting of curvature measures, thickness measures, relative orientation measures, length

measures, and corner points." The portion of Maki cited by the Examiner (Col. 9, lines 14-

23) discloses extracting connected feature points by finding where contours in an image

intersect each other. Extracting connected feature points does not teach a way of classifying

changes in position and shape of an animal as postures as recited in claim 14. None of the

cited references, either alone or in combination, teaches or discloses all of the limitations of

claim 14, and there is no motivation to combine the references. Applicants respectfully

submit that claim 14 is not obvious and is allowable.

Regarding claims 16, 17, 19, 21, 28, 33, 39 and 48, none of the references cited by the

Examiner correspond to the claimed limitations.

The Examiner's grouping of claims 15, 22-27, and 29-32, and 34-38, 40-47, and 49-

55 and rejecting them because analogous arguments apply does not enable Applicants to

properly respond to the rejection and hence the rejection should be withdrawn. Quite clearly,

none of the limitations of these claims are addressed by Maki or Pugh, and Shuster fails to

supply the teaching or suggestions that would render these claims obvious.

The Examiner rejected claim 20 under § 103(a) as being unpatentable over Maki in view of Pugh and further in view of U.S. Patent No. 5,870,138 to Smith et al. ("Smith"). Applicants respectfully traverse.

As set forth above, neither Maki nor Pugh, either alone or in combination, teaches or discloses all of the limitations of claim 8, the independent claim from which claim 20 indirectly depends, and does not teach or disclose all of the limitations of the intervening claims. Thus, claim 20 is allowable.

Further, there is no motivation to combine Smith with either Maki or Pugh, and the Examiner does not provide one. The portion of Smith cited by the Examiner (Col. 17, lines 41-55) discloses a device that analyzes output of a face changer to output the probability of input images belonging to a specified set of expressions, and that the device may be realized as a Hidden Markov Model. There is no suggestion or motivation in Maki to use a Hidden Markov Model to output the probability of input images belonging to a specified set of expressions in Maki's system. Indeed, to do so would not appear to be possible and still use the algorithms and methods disclosed in Maki. Also, there is no motivation to combine Smith, a reference that discloses a device that analyzes output of a face changer, with Pugh, a reference that discloses an apparatus used for assisting a user in training a dog.

None of the cited references, alone or in combination, teach or disclose all of the limitations of claim 20, and there is no motivation to combine the references. Applicants respectfully submit that claim 20 is not obvious and is allowable.

To the extent that the Examiner disagrees with Applicants that the cited sections of the cited art do not disclose the claimed features it is requested that he explain how those sections relate at all to the claimed elements as opposed to merely making conclusory statements that they are the same.

ALLOWED CLAIMS

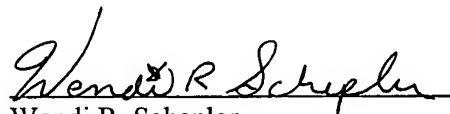In section 4 of the Office Action, the Examiner allowed claims 11, 13, and 18.

CONCLUSION

Based on the foregoing remarks, Applicants respectfully submit that all pending claims in the present application are in condition for allowance and respectfully request the issuance of a Notice of Allowance. If a telephone conference would facilitate the prosecution of this application, the Examiner is invited to contact Applicants' attorney at the number listed below.

Respectfully submitted,

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Dated: _10/5/2005_   By: _Wendi R Schepler_

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